

treatment (without invoking two infraspecific ranks) with the fewest possible name changes.

**Rumex salicifolius** J. A. Weinm. var. **lacustris** (E. Greene) Hickman, stat. et comb. nov.—*Rumex lacustris* E. Greene, *Erythea* 3:63. 1895.—TYPE: *Baker and Nutting*, in 1894, CA, Lassen Co., Silver Lake.

**Rumex salicifolius** J. A. Weinm. var. **transitorius** (Rech. f.) Hickman, stat. et comb. nov.—*Rumex transitorius* Rech. f., *Repert. Spec. Nov. Regni Veg.* 40:296. 1936.—TYPE: no type was designated. Lectotype here designated: CA, Humboldt Co., immediate vicinity of Eureka, 20 Jun 1901, *Tracy 1157* (UC!). This specimen was cited among others in protologue and was the source of Rechinger's habit illustration (1937, op. cit.).

**Rumex salicifolius** J. A. Weinm. var. **triangulivalvis** (Danser) Hickman, stat. et comb. nov.—*Rumex salicifolius* J. A. Weinm. subsp. *triangulivalvis* Danser, *Ned. Kruidk. Arch.* 1925:415. 1926.—*Rumex triangulivalvis* Rech. f., *Repert. Spec. Nov. Regni Veg.* 40:297. 1936.—TYPE: no type was designated; the illustration fixes application of the name.

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HETEROSTYLY IN *Salvia brandegei* (LAMIACEAE).—Epling (*Ann. Missouri Bot. Gard.* 27:259–263, 1940) recognized that *Salvia brandegei* Munz is dimorphic in stamen length. The following report confirms not only stamen dimorphism, but also heterostyly, as defined by Ganders (*New Zealand J. Bot.* 17:607–635, 1979).

*Salvia brandegei* is one of the rarest and least known *Salvia* species of the sect. *Audibertia* (Neisess, *Evolution, Systematics, and Terpene Relationships of Salvia* Section *Audibertia*, Ph.D. Diss., Univ. California, Riverside, 1983). It is endemic to coastal bluffs and seaward canyons, occurring only on Santa Rosa Island (Santa Barbara Co., California) and a 40 km strip of northwestern Baja California coastline from Punta Santo Tomas south to Punta Cabras.

Specimens of *S. brandegei* were collected at Punta Cabras and grown under uniform garden conditions at the University of California, Riverside. Two distinct floral morphs

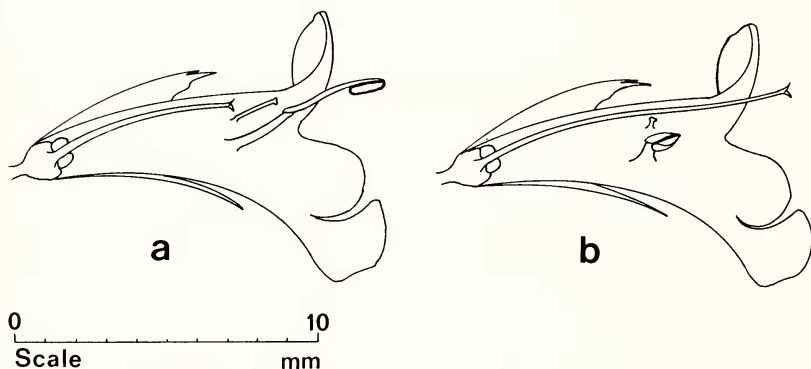


FIG. 1. Bisectioned pin and thrum forms of *Salvia brandegei*, showing differences in style, stamens and sterile staminoids. Scale bar = 1 cm. a. Thrum form; style included, stamen exerted. b. Pin form; style exerted, stamen included.

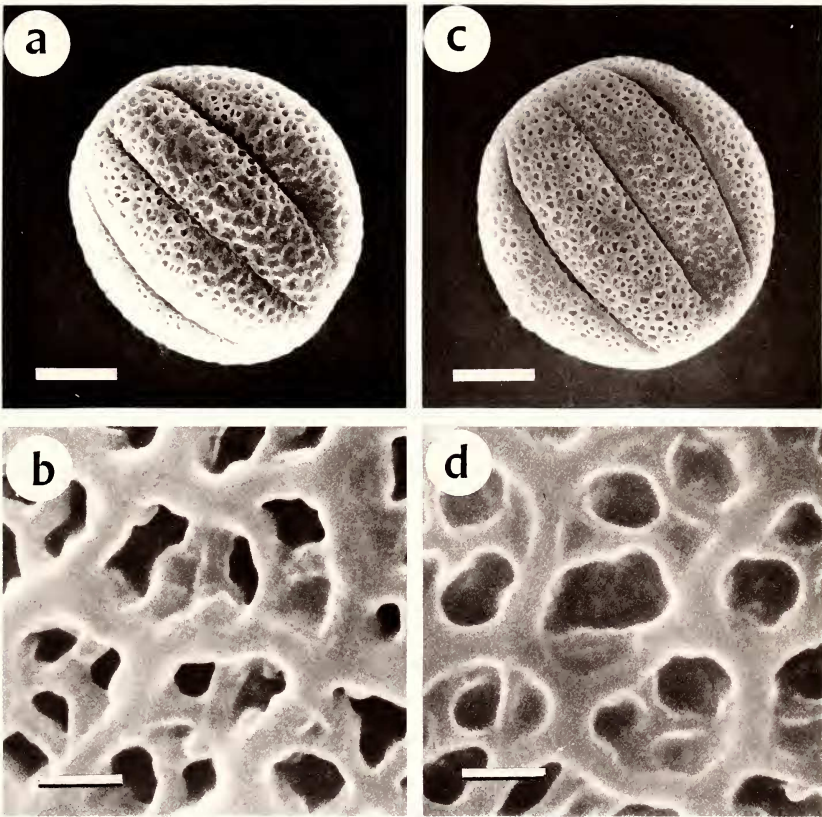


FIG. 2. *Salvia brandegei* microspores. a. Pin; scale bar = 1  $\mu\text{m}$ . b. Pin exine detail; scale bar = 10  $\mu\text{m}$ . c. Thrum; scale bar = 1  $\mu\text{m}$ . d. Thrum exine detail; scale bar = 10  $\mu\text{m}$ .

were observed (Fig. 1), one with stamens included in the throat and style exerted (pin form), and the other with stamens exerted and style included (thrum form). This observation corresponds with all voucher specimens observed in major Southern California herbaria (SD, UCR, RSA, LA, SBBG).

Pollen of both floral types was examined for exine structural differences with a JEOL JSM-35 scanning electron microscope (freshly mounted with double-sticky tape and gold coated by a Technics Hummer V sputter-coater). There was no apparent difference in external morphology (Fig. 2). Because differences in pollen size often occur in heterostylous species (Ganders 1979; Anderson, Taxon 22:537-542, 1973), relative size of the pin and thrum pollen was measured. Light microscopic images were projected through a drawing tube onto a Hewlett-Packard 9111 A graphics tablet. The outline of each image was traced and areas were calculated using a linked Hewlett-Packard 85 computer (program for area and distance provided by HP). Over fifty microspores of each floral type were measured and analysis of variance revealed no significant difference in mean area ( $p < 0.05$ ).

Male fertility was tested following the FDA method (J. Heslop-Harrison and Y.

Heslop-Harrison, *Stain Techn.* 45:115-120, 1970). Both pin and thrum forms produced viable pollen (over 40% in all counts).

Segregated pin and thrum plants were self- and cross-pollinated in both directions. Seed was set in all cases, showing both floral morphs to be female fertile and self-compatible. The potential for natural selfing was examined by maintaining mixed and segregated pin and thrum plants in an open garden. The mixed group set an average of 0.27 seeds per flower ( $n = 200$ ), whereas the segregated groups yielded no seed at all. This suggests that the mechanical characteristics of *S. brandegei* floral morphology discourage selfing in wild populations, despite the fact that the species is self-compatible.

Heterostyly is known in only 24 angiosperm families (Ganders 1979) and has not previously been reported in the Lamiaceae. It is rarely found in self-compatible species and, except for an unsubstantiated report by Darwin from the Verbenaceae (The Different Forms of Flowers on Plants of the Same Species, 1877, John Murray, London), the occurrence of heterostyly in *S. brandegei* is the first substantiated case for any zygomorphic dicotyledonous plant.—KURT R. NEISESS, Department of Botany, University of Texas, Austin, 78712. (Received 25 Nov 1983; accepted 16 Apr 1984.)

## NOTEWORTHY COLLECTIONS

### MONTANA

*ALLIUM PARVUM* Kell. (LILIACEAE).—Ravalli Co., open slopes, Painted Rock's cliffs, W. Fork Bitterroot River, 1710 m, 15 Jun 1975, *J. Cory 1447* (MONTU); steep w.-facing slope above E. Fork Bitterroot River just s. of Spring Gulch Cmpg. (T1N R20W S7), 1330 m, 22 May 1983, *Lesica and Moore 2582* (MONTU, ID). (*Lesica and Moore 2582* verified by D. Henderson, ID.)

*Significance.* First record for MT.

*ASTRAGALUS CERAMICUS* var. *APUS* Barneby (FABACEAE).—Beaverhead Co., Centennial Valley, blowout areas in sandhills 40 km ne. of Monida (T13S R2W S23), 2010 m, 11 Jul 1983, *Lesica 2716* (MONTU, NY). (Verified by R. C. Barneby, NY.)

*Significance.* First record for MT.

*ASTRAGALUS CHAMAELEUCE* Gray (FABACEAE).—Carbon Co., dry flats 1 km ne. of Gyp. Springs 16 km n. of Cowley, WY (T9S R27E S33), 1370 m, 18 Jun 1983, *Lesica 2623* (MONTU, NY). (Verified by R. C. Barneby, NY.)

*Significance.* First record for MT.

*ASTRAGALUS MOLYBDENUS* Barneby (FABACEAE).—Teton Co., E. Front mountains, Mount Wright (T26N R10 W S25), 2240 m. Dense growth in horizontal strips on mostly stabilized slide. 23 Jul 1982, *Lackschewitz and Ramsden 10062* (MONTU, NY). (Collection det. by R. Barneby, NY.)

*Significance.* Previously known only in the high southern Rocky Mts. of Colorado, roughly 960 air-km to the s.